



# ROBINAIR



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## Service Manual

**Model 34800/34801/AC900  
Refrigerant Management Center  
CFC 12, HFC 134a Recycling Equipment**

Theory of Operation and Safety Precautions .....	2
Component Descriptions .....	3
Flow Diagram Components .....	6
Flow Diagram .....	7
Pictorial View - Front .....	8
Manifold Block Flow Diagram .....	9
Wiring Diagram .....	10
Main Board Diagram .....	11
Plumbing Schematic .....	12
Display Definitions .....	13
Control Panel Components .....	13
Relay Specifications .....	14
Relay Troubleshooting .....	14
Component Specifications .....	15
Compressor Specifications and Service .....	16
Troubleshooting .....	17
Diagnostic Procedures .....	24
RA19210 Scale Accuracy Check and Recalibration .....	25
Checking the Scale Accuracy .....	25
Recalibrating the Scale .....	25
Setting the P-1 Pot .....	25
Diagnostic Procedures .....	26
Deep Diagnostic Functions .....	28
Function Test .....	29

## Theory of Operation and Safety Precautions

The Series 34800/34801/AC900 recovery, recycling, evacuation, and recharging units are designed for R-12 and R-134a refrigerants only. These units are UL approved and meet SAE J-1770 standards.

These units began production in March of 1999, for AC900 made prior to this date refer to previous AC900 service manual. The model, serial number, and manufacturing date code can be found on a white tag located on the back of the unit above the tank.

### DEPRESSURIZING THE UNIT

**NOTE:** Since the series 34800/34801/AC900 has separate components for each refrigerant type, it is only necessary to depressurize the side in need of repairs. For this process you will need a separate hand-held manifold set.

1. Close both the blue liquid and red vapor valves on the 30 pound recovery tank.
2. Disconnect all hoses from the 30 pound recovery tank.
3. Disconnect the red high side and blue low side hoses from a hand-held manifold gauge set.
4. Connect the blue 36" liquid hose to the low side (blue handle) of the hand-held manifold gauge set. Connect the red 36" vapor hose to the high side (red handle) of the manifold gauge set.
5. Connect the yellow hose attached to the center port of the hand-held manifold gauge set to the inlet of a separate recovery unit.
6. Open both manifold valves on the hand-held manifold gauge set.
7. Plug in the separate recovery unit and start its recovery process.
8. When the hand-held gauge set shows 0 psi, stop the recovery process. Wait 10 minutes and watch the hand-held manifold gauges for a pressure rise above zero. Repeat steps 7 and 8 until positive pressure does not develop on the hand-held gauge set.
9. Disconnect the blue 36" liquid and red 36" vapor hoses from the hand-held manifold gauge set.
10. Close the high side manifold valve on the control panel of the 34800/34801/AC900. Disconnect the red 96" hose from the back of the unit. Connect the yellow 36" air purge hose to the low side (blue handle) of a hand-held manifold gauge set. Connect a hose from the high side port of the machine to the high side of the hand-held manifold gauge set. Connect the hose from the center port of the hand-held manifold set to the inlet of the separate recovery unit.
11. Open both the high and low side gauge valves on the control panel of the 34800/34801/AC900 and the hand-held gauge set.
12. Start the recovery process on the separate recovery unit.
13. When the pressure on the hand-held gauge set shows 0 psi, stop the recovery process. Wait 10 minutes and watch the hand-held manifold gauges for a pressure rise above zero. Repeat Steps 12 and 13 until positive pressure does not develop on the hand-held gauge set.



### WARNING



**Always wear safety goggles when working with refrigerants. Contact with refrigerant can cause eye injury. Disconnect lines and hoses with extreme caution! Pressurized refrigerant may be present in lines and hoses. Always point lines and hoses away from you and anyone nearby.**

**Always unplug the station from the power source before removing any of the shrouding or beginning any service work.**

**To order parts, please FAX your order to 1-800-222-7805.**

**All service related questions should be directed to Robinair at 1-800-822-5561.**

## Component Descriptions

1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)** — Allows access to the low side of an R-134a system.
  - RA19115 Coupler Repair Kit (front O-ring only)
2. **18191A R-134a High Side Coupler (red actuator, larger I.D.)** — Allows access to the high side of an R-134a system.
  - RA19115 Coupler Repair Kit (front O-ring only)
3. **62096 R-134a Low Side Hose** — Provides flow from the low side coupler to the low side port on the station (14mm x 1/2" Acme).
  - 17772 Hose to Coupler O-ring
4. **63096 R-134a High Side Hose** — Provides flow from the high side coupler to the high side port on the station (14mm x 1/2" Acme).
  - 17772 Hose to Coupler O-ring
5. **68296A R-12 96" Blue Quick Seal Hose** — Low side service hose to the vehicle.
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 45° 1/4" Flare Quick Seal Repair Kit
6. **68396A R-12 96" Red Quick Seal Hose** — High side service hose to the vehicle.
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 45° 1/4" Flare Quick Seal Repair Kit
7. **68126 36" Red R-134a Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the R-134a storage tank.
  - 17773 Replacement R-134a Quick Seal O-ring
  - 40302 R-134a Quick Seal Repair Kit
8. **68127 36" Blue R-134a Tank Hose** — Allows flow from the liquid side of the R-134a tank to the recycling and charging solenoids.
  - 17773 Replacement R-134a Quick Seal O-ring
  - 40302 R-134a Quick Seal Repair Kit
9. **68128 36" Yellow R-134a Tank Hose** — Supplies pressure from the top of the recovery tank to the air purge control.
  - 17773 Replacement R-134a Quick Seal O-ring
  - 40302 R-134a Quick Seal Repair Kit
10. **68121A 36" Red R-12 Tank Hose** — Delivers refrigerant being recovered or recycled to the vapor side of the R-12 storage tank.
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 45° 1/4" Flare Quick Seal Repair Kit
11. **68122A 36" Blue R-12 Tank Hose** — Allows flow from the liquid side of the R-12 tank to the recycling and charging solenoids.
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 45° 1/4" Flare Quick Seal Repair Kit
12. **68123A 36" Yellow R-12 Tank Hose** — Supplies pressure from the top of the recovery tank to the air purge control.
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 450 1/4" Flare Quick Seal Repair Kit
13. **RA19393 (RA19402 MacTools) R-134a High Side Gauge** - Reads pressure entering the high side hose.
14. **RA19392 (RA19403 MacTools) R-134a Low Side Gauge** — Reads pressure entering the low side hose.
15. **RA 19393 (RA19400 MacTools) R-12 High Side Gauge** — Reads pressure entering the high side hose.
16. **RA19392 (RA19401 MacTools) R-12 Low Side Gauge** — Reads pressure entering the low side hose.
17. **121238 Low and High Side Manifold Valve R-134a Assembly** — Allows refrigerant flow from the high and low side hoses to the center manifold port.
18. **121239 Low and High Side Manifold Valve R-12 Assembly** — Allows refrigerant flow from the high and low side hoses to the center manifold port.
19. **RA19429 Vacuum Pump Protection Switch** — A normally open sensor that closes when pressure greater than 25 psi is present in the A/C system. If the pressure is less than 25 psi in the recovery mode, the display reads "CH-P." In the vacuum mode, the display reads "U-HI" if the pressure is 25 psi or greater in the A/C system. This indicates that a recovery procedure must be performed before attempting a vacuum.
20. **RA18752 Vacuum Sensor** — A normally closed sensor that sends a signal to the main board when a 13" Hg vacuum has been reached on the inlet line.
21. **RA19258 Recovery Solenoid Rebuild Kit** — A normally closed solenoid, designed to prevent the flow of refrigerant into the system oil separator while the unit is off or in any mode other than Recovery.
22. **RA19258 Recycling Solenoid Rebuild Kit** — A normally closed solenoid that prevents the flow of refrigerant into the system oil separator when the unit is not in Recycling Mode.

## Component Descriptions *(continued)*

**23. RA19258 Charging Solenoid Rebuild Kit** — A normally closed solenoid preventing flow into the A/C system when the unit is turned off or in any mode other than Charging.

**24. RA19258 Vacuum Solenoid Rebuild Kit** — A normally closed solenoid designed to prevent flow to the vacuum pump during Recovery or Charging.

**25. RA15425 (RA15428 220 volt) Vacuum Pump** — A 6 CFM, two stage rotary vane pump designed to pull moisture and air from an A/C system.

- 120165 Vacuum Tubing

**26. System Oil Separator** — Performs three functions. Internal heat evaporates the saturated vapor, preventing liquid from entering the compressor. Any oil droplets contained in the refrigerant drop out in the separator. The system oil separator's third function is that it acts as a heat exchanger.

- RA19480 Manifold O-Ring Kit

**27. RA19291 Oil Drain Valve** — Allows the oil removed from the system to be drained when Recovery is complete. The same amount of oil should be returned during charging.

- RA17419 Oil Drain Bottle

**28. 34724 Spin-on Filter-Drier** — Removes moisture, acid, and oil from the refrigerant.

- 40084 Replacement Filter Gasket

**29. RA19458 (RA19457 220 volt) Compressor** — Converts low pressure, low temperature incoming gas into high pressure, high temperature discharge gas.

- 111043 Replacement Start Capacitor

**30. Compressor Oil Separator** — Traps compressor oil that has migrated out with refrigerant while passing through the compressor. The oil is stored in the separator until the equalization solenoid loses power and allows the oil to be returned to the compressor.

- RA19480 Manifold O-Ring Kit

**31. RA19258 (RA17578 220 volt) Equalization Solenoid** — A normally closed solenoid that allows oil trapped in the compressor oil separator to be forced back into the suction side of the compressor, equalizing pressure on the high and low side of the compressor and pressurizing the system oil separator as power is applied to the solenoid. Opens for 20 seconds after recovery is complete. After the compressor has run for 10 continuous minutes, the solenoid opens for three seconds.

**32. RA19427 High Pressure Cutout** — A normally closed sensor that shuts off the unit when the discharge pressure reaches 435 psi.

*NOTE: This switch has three contacts; the outer two contacts (numbered 1 and 3) are normally closed.*

**33. RA19326 Recovery Check Valve** — Allows flow in one direction only and prevents refrigerant in the tank from coming back into the unit during shutdown.

**34. RA19430 Automatic Expansion Valve** — Converts incoming liquid refrigerant into a low pressure saturated vapor. The calibration of the expansion valve can be checked at the oil drain with a pressure gauge. The allowable tolerance of the valve is 30 to 40 psi during Recycling.

*NOTE: Allow the unit to recycle 10 minutes with a minimum of 10 pounds of refrigerant in the tank before checking or adjusting the pressure.*

**35. RA19477 (110V) RA19616 (220V) R-134a Air Purge Device** — After the recycling sequence has run for 30 seconds, a timer (programmed in the main board) opens the normally closed solenoid of the selected refrigerant type, allowing pressure to enter the lower cavity of the air purge device. When pressure on the lower cavity exceeds pressure on the upper cavity by 7 psi or more, a valve inside the device opens to release the air pressure from the cavity. When the pressures come within 3 psi of each other, the device stops purging.

**36. RA19476, RA19623 (220V) R-12 Air Purge Device** — After the recycling sequence has run for 30 seconds, a timer (programmed in the main board) opens the normally closed solenoid of the selected refrigerant type allowing pressure to enter the lower cavity of the air purge device. When pressure on the lower cavity exceeds pressure on the upper cavity by 7 psi or more, a valve inside the device opens to release the air pressure from the cavity. When the pressures come within 3 psi of each other, the device stops purging.

**37. 17105 R-12 Recovery Tank** — Stores refrigerant to be recycled at a later time. The tank has two valves; the vapor valve is an open fitting to the tank and the liquid valve has a draw tube extending to within 2 inches of the bottom of the tank.

**38. 34705 R-134a Recovery Tank** — Stores refrigerant to be recycled at a later time. The tank has two valves; the vapor valve is an open fitting to the tank and the liquid valve has a draw tube extending to within 2 inches of the bottom of the tank.

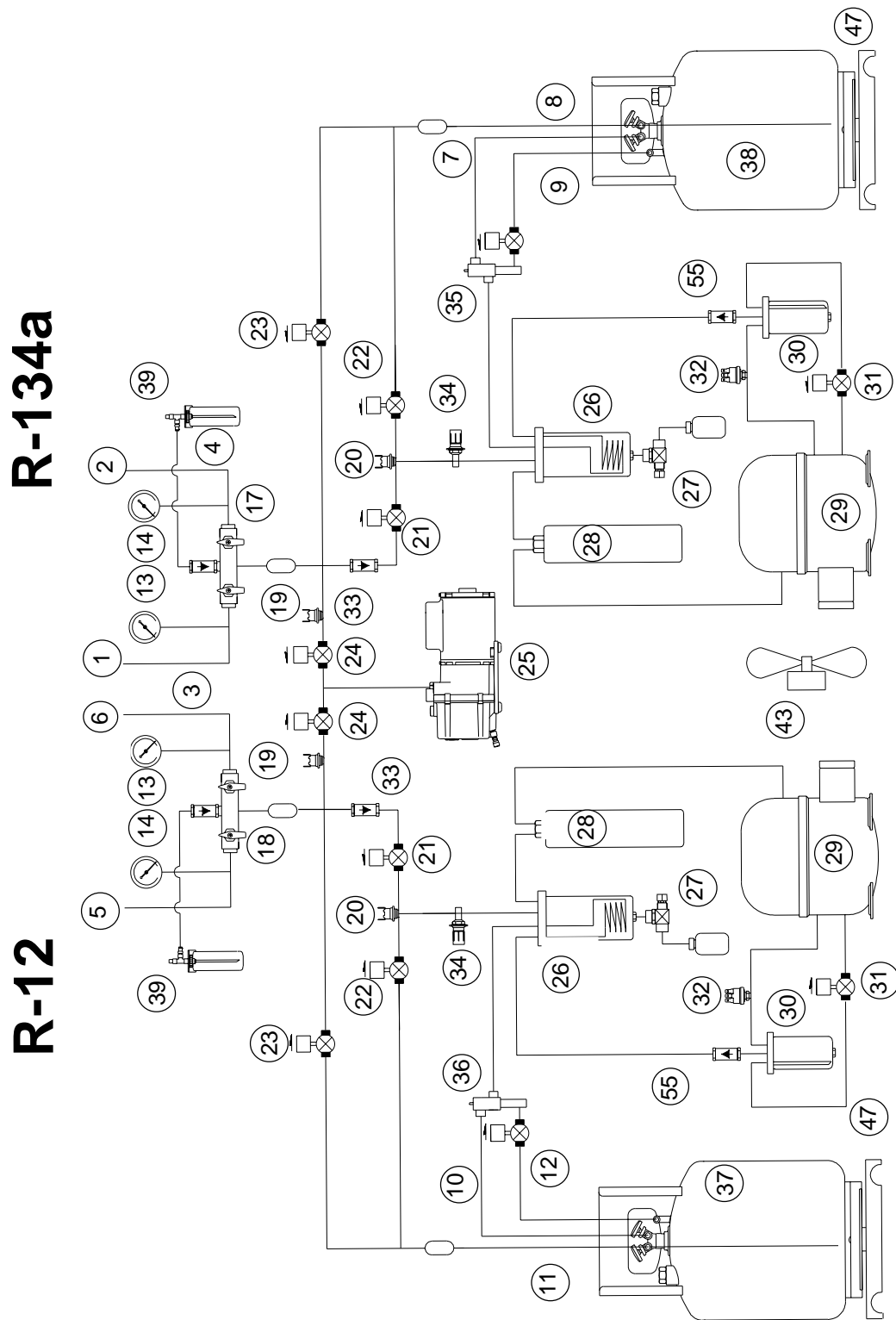
## Component Descriptions *(continued)*

- 39. 120034 Oil Injector Assembly** — Controls the flow of oil from the injection bottle to the vehicle.
- **113025** Oil Injector Check Valve
  - **RA19141** Oil Bottle
  - **RA19478** Replacement Valve
- 40. RA19303 (110V), RA19294 (220V), RA19097 (230V) Power Cord** — Conducts power to the unit.
- 41. RA19047 Vacuum Pump Outlet** — Female socket where the vacuum pump power cord connects.
- 42. RA19343 Main Power Switch** — Controls the power between the power cord and the main board.
- 43. RA17416 (RA17516 220 volt) Fan** — Runs as soon as the MAIN POWER switch is turned on to cool the cabinet temperature.
- 44. 117684 Refrigerant Selector Switch** — Indicates which refrigerant type the machine is set-up for.
- 45. RA19564 (110V), RA19618 (220V) (RA19560 MacTools) Main Board** — Controls the unit's functions, automatic or programmed.
- 46. RA19445 Scale Assembly** — Sends a signal to the main board for accurate weight readings and tank overfill protection.
- 47. RA17459 (RA17324 220 volt) System Relay** — Energizes the compressors and vacuum pump, allowing the sensors to turn off the unit. The relay has two sets of contacts which close when the coil is energized.
- 48. RA19404 Casters**
- **113540** Caster Screws (7 required)
  - **109525** Caster Nuts (7 required)
- 49. RA19405 Wheels**
- **102755** Wheel Washers (6 required)
  - **100723** Cotter Pin (2 required)
- 50. 112776 Fuse Holder**
- 51. RA17416 (RA17516 220V) Fan** — Receives power when main power is turned on. Cools internal unit components.
- 52. RA19545 Manifold Block** — Contains recovery, recycle, recharge and equalization solenoids. Also located on the block are the Hi-P sensor, vacuum sensor, vacuum pump, protection switch, expansion valve, filter, oil and compressor oil separator.
- 53. Keypad RA19561 (RA19562 AC900)** — Overlay which contains electronic keypad. All inputs go directly to circuit board via the ribbon. If a keypad is bad, all four keys in one row or one column will not respond.
- 54. RA19282 Discharge Check Valve** — Allows flow in one direction only and prevents refrigerant and pressure from the tank from being equalized back into the low side of the unit when the equalization solenoid opens to return compressor oil and repressurize the system oil separator.

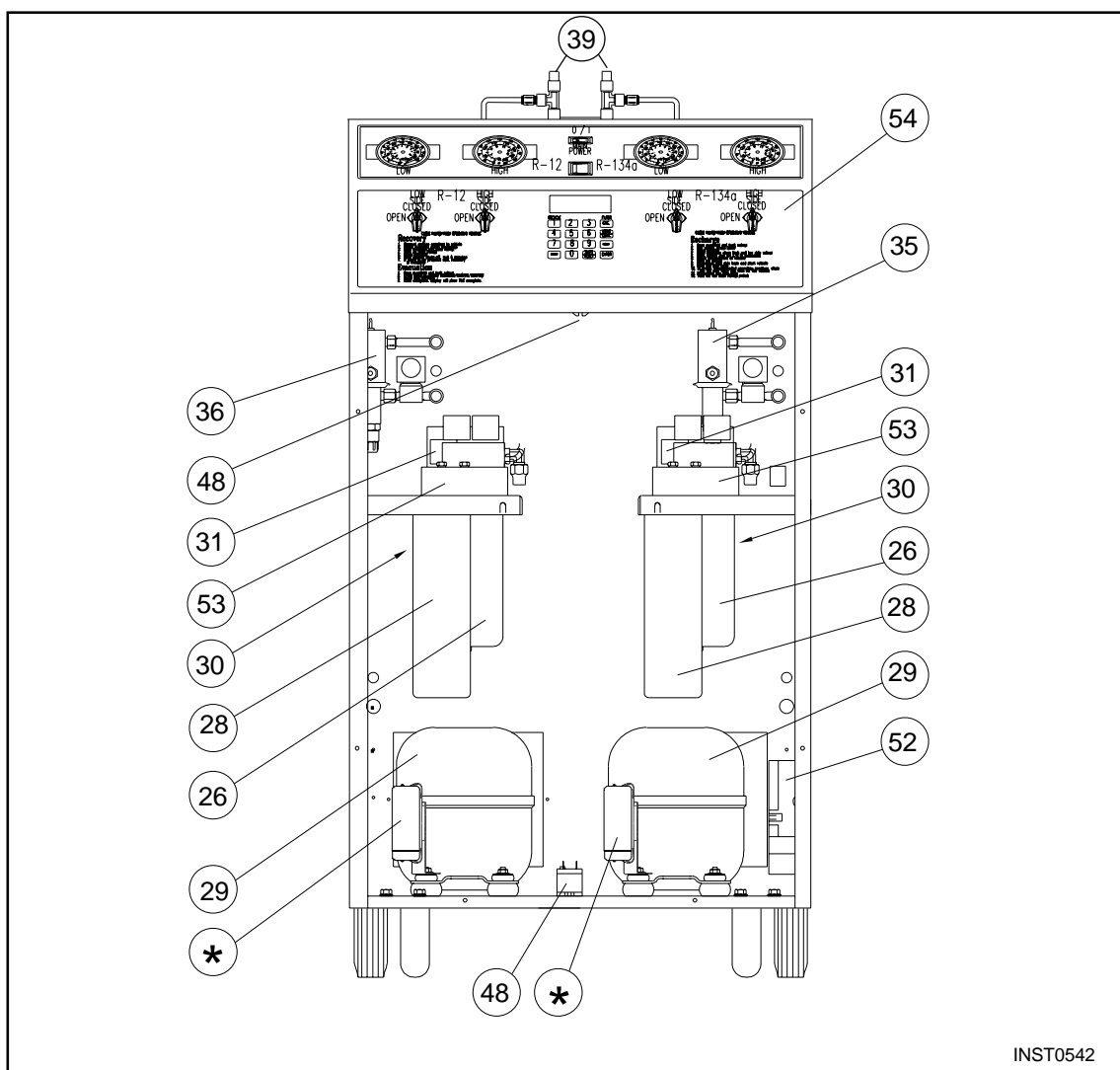
## Flow Diagram Components

1. **18190A R-134a Low Side Coupler (blue actuator, smaller I.D.)**
2. **18191A R-134a High Side Coupler (red actuator, larger I.D.)**
  - RA19115 Coupler Repair Kit (front O-ring only)
3. **62096 R-134a Low Side Hose —**
  - 17772 Hose to Coupler O-ring
4. **63096 R-134a High Side Hose —**
  - 17772 Hose to Coupler O-ring
5. **68296A R-12 96" Blue Quick Seal Hose —**
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 450 1/4" Flare Quick Seal Repair Kit
6. **68396A R-12 96" Red Quick Seal Hose —**
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 450 1/4" Flare Quick Seal Repair Kit
7. **68126 36" Red R-134a Tank Hose —**
  - 17773 Replacement R-134a Quick Seal O-ring
  - 40302 R-134a Quick Seal Repair Kit
8. **68127 36" Blue R-134a Tank Hose —**
  - 17773 Replacement R-134a Quick Seal O-ring
  - 40302 R-134a Quick Seal Repair Kit
9. **68128 36" Yellow R-134a Tank Hose —**
  - 17773 Replacement R-134a Quick Seal O-ring
  - 40302 R-134a Quick Seal Repair Kit
10. **68121A 36" Red R-12 Tank Hose —**
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 450 1/4" Flare Quick Seal Repair Kit
11. **68122A 36" Blue R-12 Tank Hose —**
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 450 1/4" Flare Quick Seal Repair Kit
12. **68123A 36" Yellow R-12 Tank Hose —**
  - 18180 Replacement R-12 Quick Seal O-ring
  - 18451 450 1/4" Flare Quick Seal Repair Kit
13. **RA19393 (RA19402 MacTools) R-134a High Side Gauge —**
  - 11715 Replacement Gauge Lens
14. **RA19392 (RA19403 MacTools) R-134a Low Side Gauge —**
  - 11715 Replacement Gauge Lens
15. **RA19393 2 3/4" R-12 High Side Gauge (RA19400 MacTools)**
  - 11715 Replacement Gauge Lens
16. **RA19392 2 3/4" R-12 Low Side Gauge (RA19401 Mac Tools)**
  - 11715 Replacement Gauge Lens
17. **121238 R-134a High and Low Side Manifold Valves**
18. **121239 R-12 High and Low Side Manifold Valves**
19. **RA19429 Vacuum Pump Protection Switch**
20. **RA18752 Vacuum Sensor**
21. **RA19258 Recovery Solenoid**
22. **RA19258 Recycling Solenoid**
23. **RA19258 Charging Solenoid**
24. **RA19258 Vacuum Solenoid**
25. **RA15425 (RA15428 220 volt) Vacuum Pump**
26. **System Oil Separator**
27. **RA19291 Oil Drain Valve**
28. **34724 Spin-on Filter-Drier**
29. **RA19458 (RA19457 220 volt) Compressor**
30. **Compressor Oil Separator**
31. **RA19258 Equalization Solenoid**
32. **RA19427 High Pressure Cutout**
33. **RA19326 Recovery Check Valve**
34. **RA19430 Expansion Valve**
35. **RA19477 (RA19616 220v) R-134a Air Purge**
36. **RA19476 (RA19623 220v) R-12 Air Purge**
37. **17105 R-12 Recovery Tank**
38. **34705 R-134a Recovery Tank**
39. **120034 Oil Injector Assembly**
43. **RA17416 (RA17516 220v) Fan**
47. **RA19445 Scale Assembly**

## Flow Diagram



## Pictorial View of Front



INST0542

26. System Oil Separator

28. 34724 Spin-on Filter-Drier

29. RA19458 (RA19457 220v) Compressor

30. Compressor Oil Separator

31. RA19258 Equalization/Oil Return Solenoid

35. RA19477 (RA19616 220v) R-134a Air Purge Device

36. RA19476 (RA19623) 220 Volt) R-12 Air Purge Device

39. 120034 Oil Injector Assembly

48. RA17459 (RA19562 220v) System Relay

52. RA17416 (RA17516 220 volt) Fan

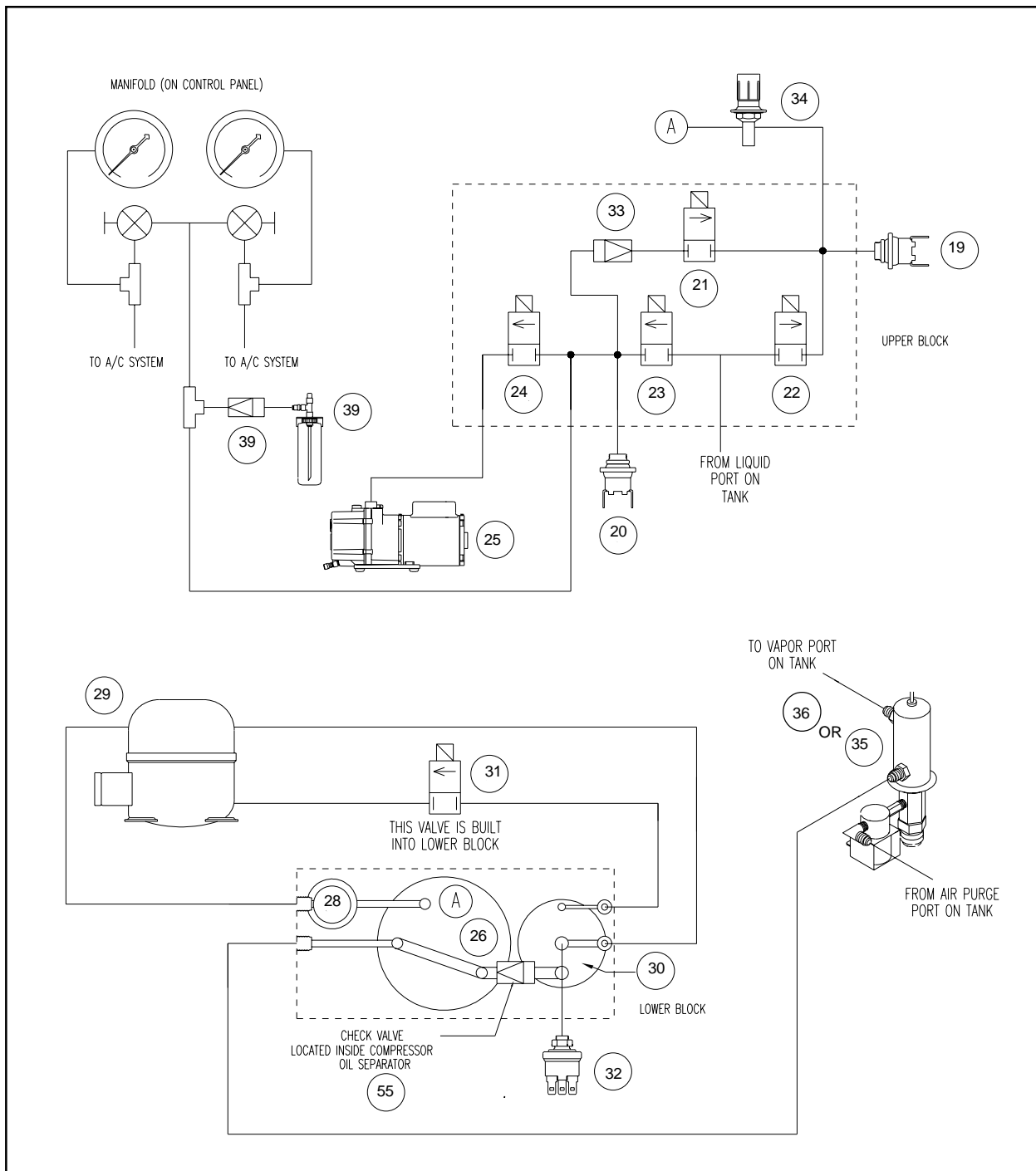
53. RA19545 Manifold Block

54. RA19561 (RA19562 Mac Tools) Keypad

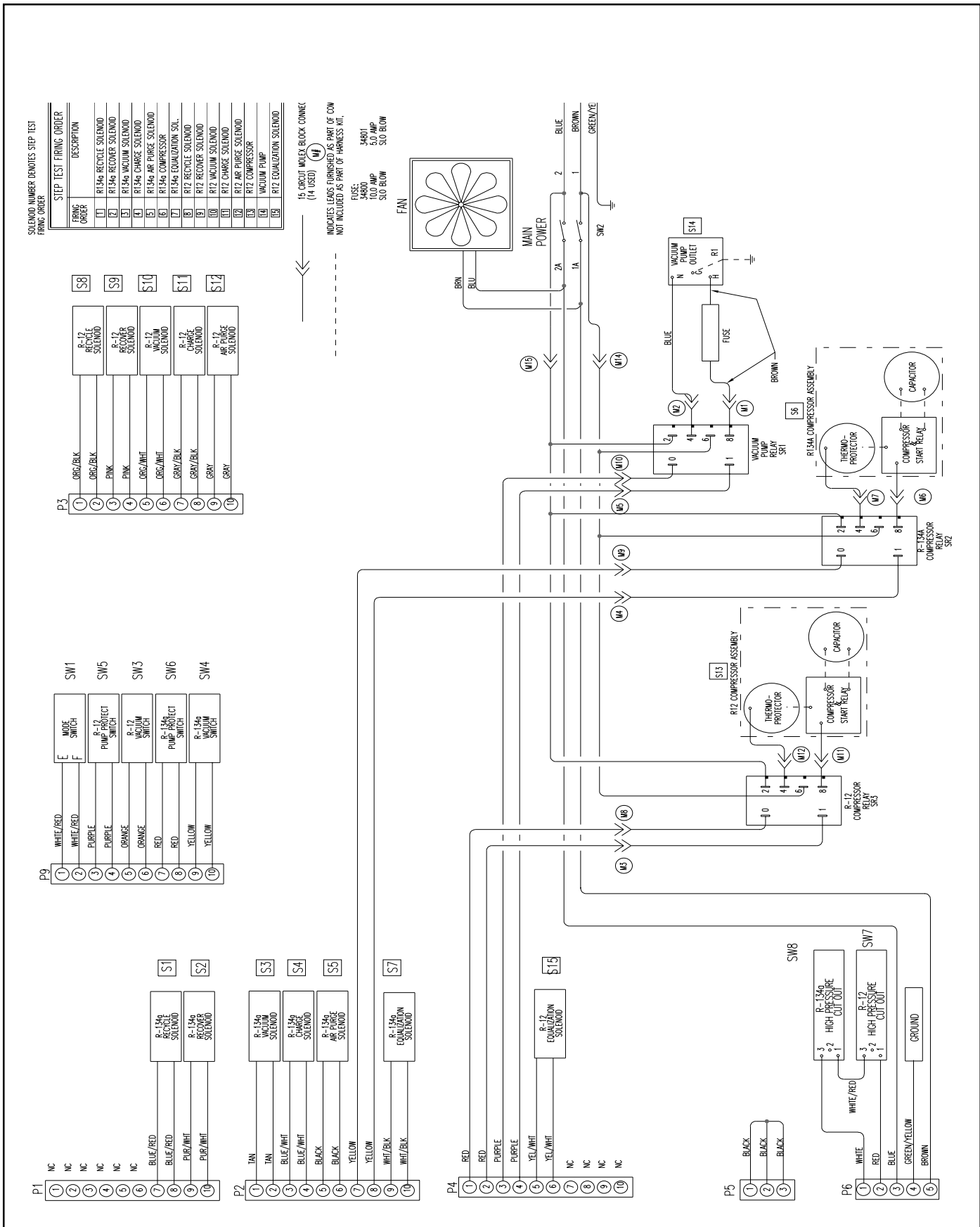
\*111043 Replacement Start Capacitor



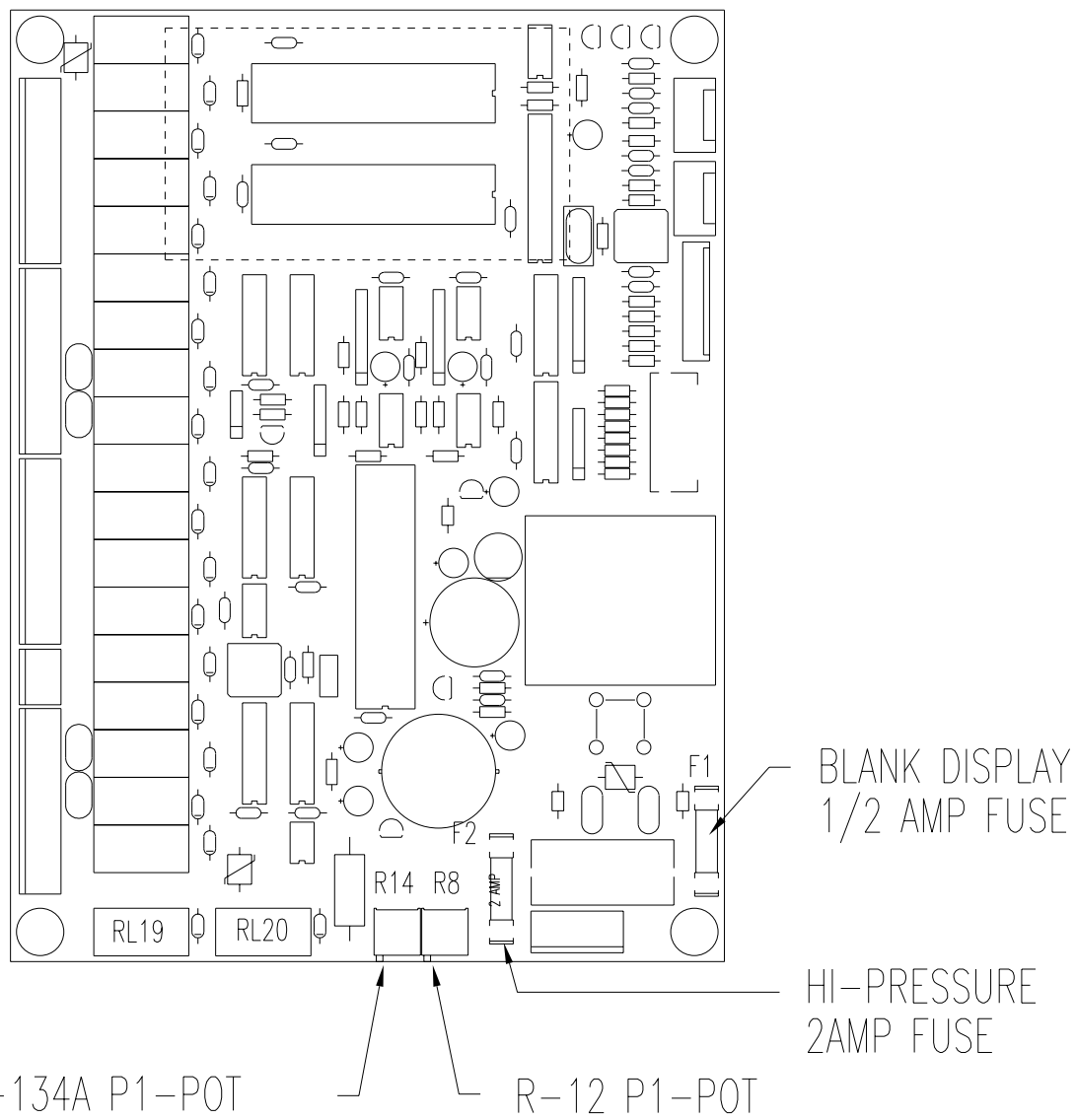
## Manifold Block Flow Diagram



# Wiring Diagram 34800/34801 & AC900



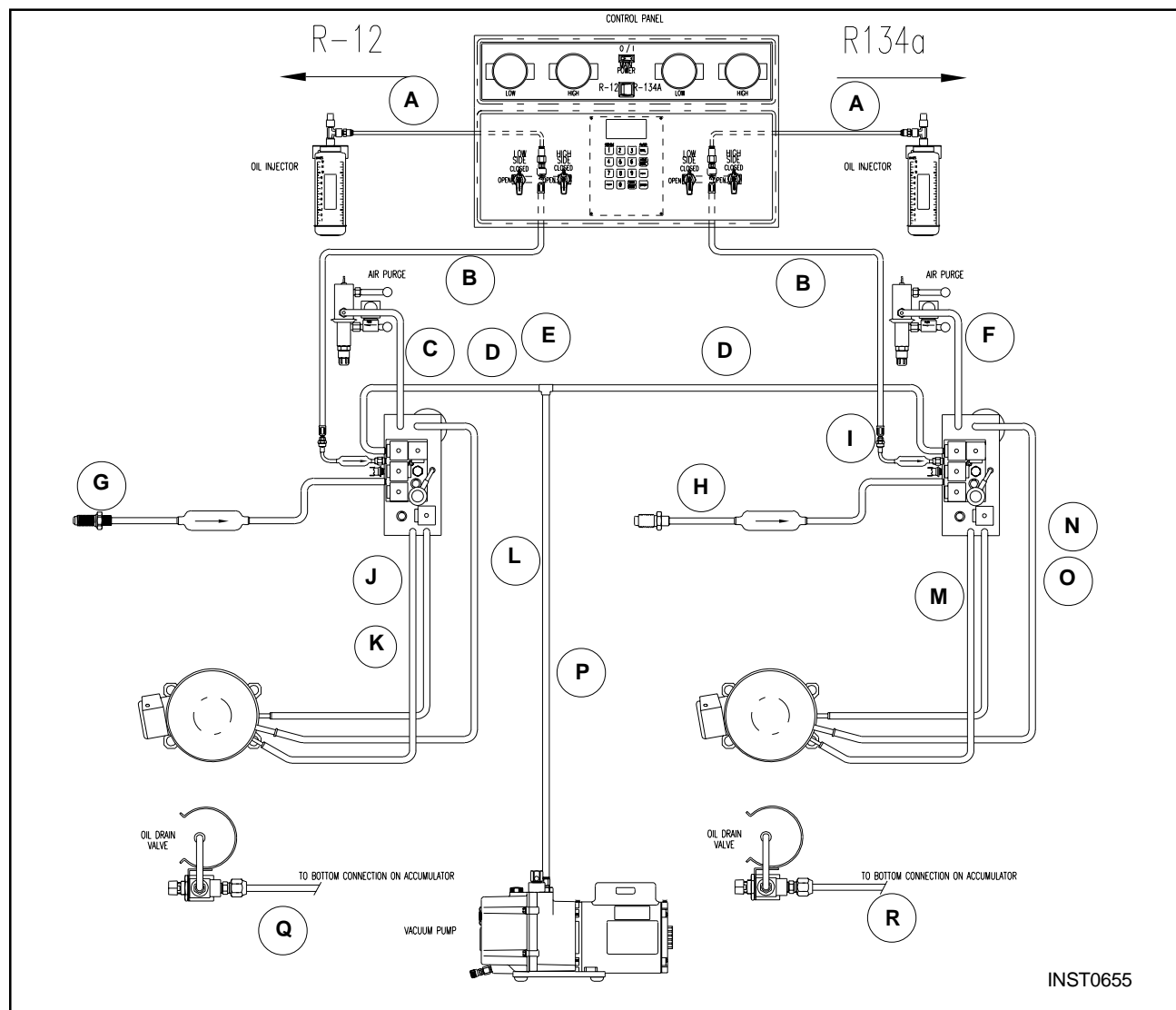
## Main Circuit Board Diagram



REAR VIEW

INST 0518

## Plumbing Schematic



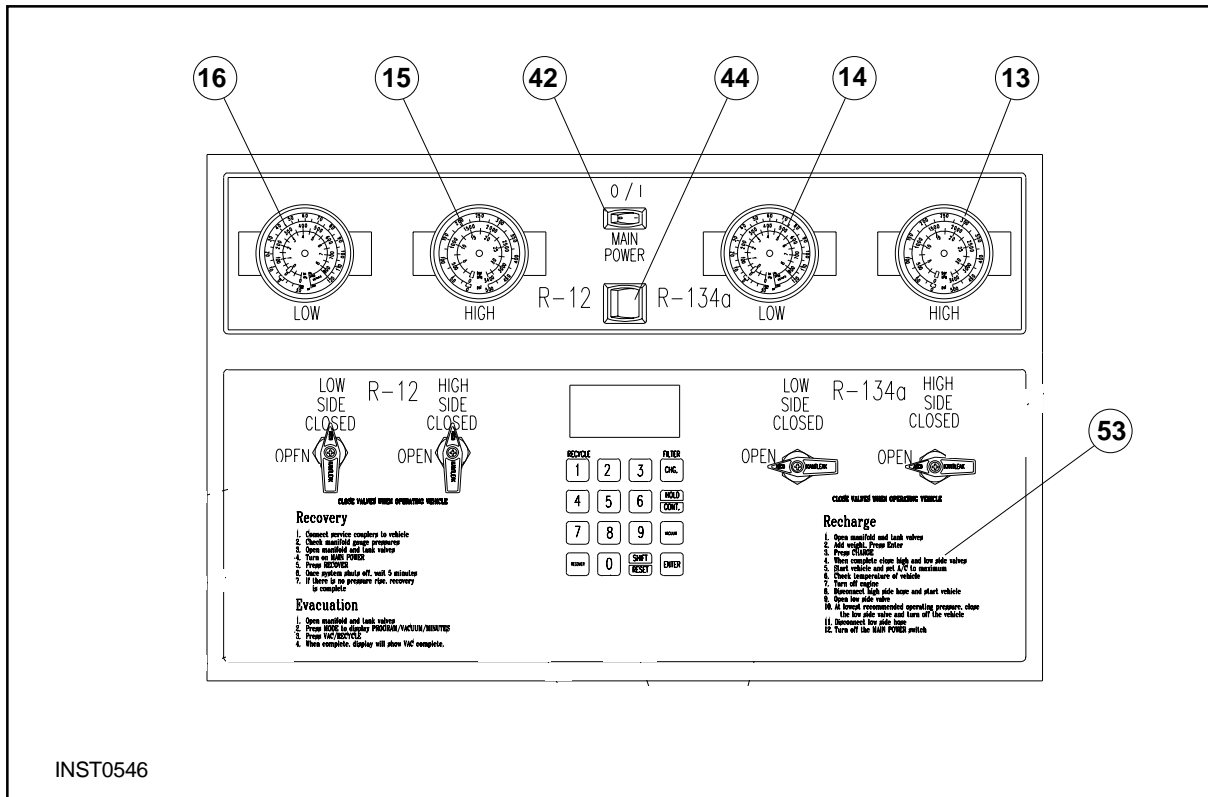
INST0655

Letter	Qty.	Description
A. 120225	2	Hose, 1/4" O.D.
B. 120887	2	Hose Assembly
C. 121188	1	Air Purge Inlet Tube
D. 120165	2	Tubing, 3/8" O.D. (22.0')
E. 121311	1	Pneumatic Connector, 3/8 Tee
F. 121195	1	Air Purge Inlet Tube
G. 121189	1	Liquid Inlet Tube
H. 121196	1	Liquid Inlet Tube
I. 121191	2	Block Inlet Tube Refrigerant
J. 121185	1	Compressor Discharge Line
K. 121186	1	Compressor Return Oil Line
L. 121187	1	Compressor Suction Line
M. 121192	1	Compressor Discharge Line
N. 121193	1	Compressor Return Oil Line
O. 121194	1	Compressor Suction Line
P. 120165	1	Tubing, 3/8" O.D. (10')
Q. 121190	1	Accumulator Oil Drain
R. 121197	1	Accumulator Oil Drain

## Display Definitions

<b>CH-P</b>	Less than 24 psi at the inlet of the machine.	<b>OIL</b>	Time to change the vacuum pump oil. To reset, press MODE and ENTER at the same time while "OIL" is displayed.
<b>CL-L</b>	The low side clearing routine is in progress.	<b>SCAL</b>	The scale is damaged, disconnected, out of calibration or overloaded. It cannot exceed 45 pounds total weight.
<b>CON</b>	The vacuum pump runs continuously.	<b>U-HI</b>	There is positive pressure on the vacuum pump. Press MODE, then RECOVER to remove the pressure. Continue the evacuation procedure.
<b>CPL</b>	The specified cycle function (recovery, evacuation, charging or adding refrigerant) is complete.		
<b>FIL</b>	The filter-drier change is in progress.		
<b>FULL</b>	The refrigerant recovery tank is full.		
<b>HI-P</b>	Internal pressure in unit is above 435 psi.		

## Control Panel Components



- 13. RA19393 (Mac Tools RA19402) R-134a High Side Gauge
- 14. RA19392 (Mac Tools RA19403) R-134a Low Side Gauge
- 15. RA19393 (Mac Tools RA19400) R-12 High Side Gauge
- 16. RA19392 (Mac Tools RA19401) R-12 Low Side Gauge
- 42. RA19343 Main Power Switch
- 44. 117684 Refrigerant Selector Switch
- 53. RA19561 (RA19562 AC900) Keypad

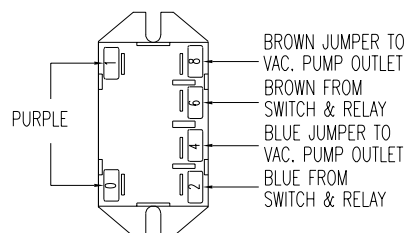
## Relay Specifications

### RA17459 (RA17324 220 volt) System Relays

The system relay is used to energize the compressor or the vacuum pump and allow the sensors to shut the unit off. The relay has two sets of contacts which close when the coil is energized.

Coil contacts 0 and 1, when energized, should have 110 volts across the terminals. While voltage is applied, the coils forms a magnetic field pulling the 2 and 4 and the 6 and 8 contacts together.

The 2 and 4 and the 6 and 8 contacts have power supplied to one terminal of the pair. When the coil is energized and supplies power to the mating component.

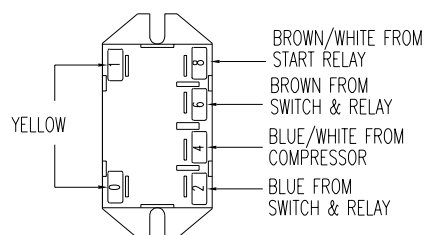


Vacuum Pump Relay

## Troubleshooting

### Manual Override Ear Not Pulled In

1. Check the proper voltage to the 0 and 1 contacts. If there is voltage, replace the relay. If there is not voltage, replace the main board.

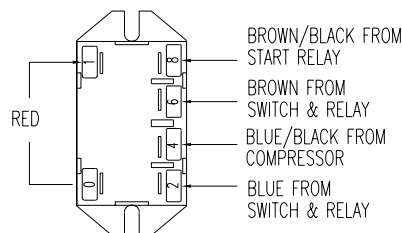


R-134a Compressor Relay

### Manual Override Ear Pulled In

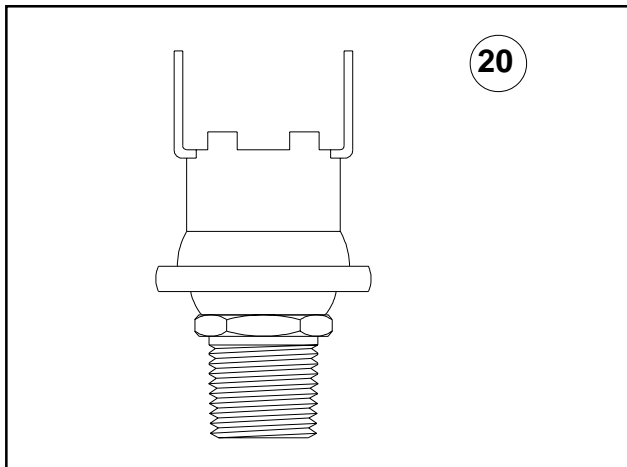
1. check for proper voltage from the power supply contact to ground. If there is no voltage, check the voltage supply source.
2. check for proper voltage from the mating supply contact to ground. If there is no voltage, replace the relay.

**NOTE:** Use of improper extension cord size can damage contact points.



R-12 Compressor Relay

## Component Specifications



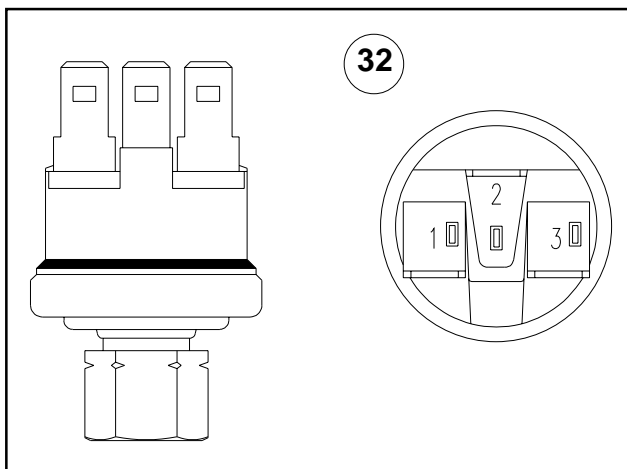
### RA18752 Vacuum Sensor

The vacuum sensor is a normally closed sensor. If a 13" ( $\pm 2$ ") Hg rating is reached at the intake, the switch opens and breaks the coil contacts, shutting off the unit. The contacts are closed when a vacuum above 13" Hg is present in the lower cavity. When a 13" Hg vacuum is achieved in the lower cavity, the spring contact has room to force away from the mating contact.

#### **TROUBLESHOOTING**

With pressure in the accumulator (open the oil drain valve to be sure pressure is present), the switch should have continuity. If it does not, replace the switch.

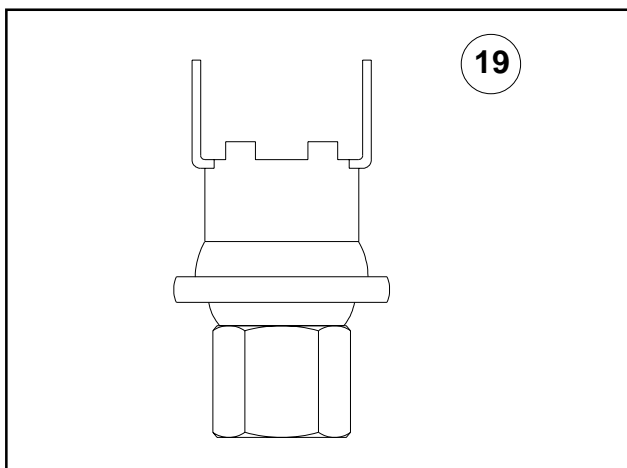
If the unit is shutting off before reaching a 13" Hg vacuum, check the inlet for obstructions before replacing the switch.



### RA19427 High Pressure Cutout

The high pressure cutout is a normally closed sensor designed to shut the unit off if the discharge pressure reaches 435 psi.

Pressure is detected through the orifice in the base of the sensor. In the normal setting (less than 435 psi on orifice), the 1 and 3 contacts are closed. When 435 psi is introduced to the orifice, the pressure forces up on the drive pin which forces the center contact to disengage the 1 and 3 contact and engage the 1 and 2 contacts. When this takes place, the unit shuts off and the display reads "HI-P."

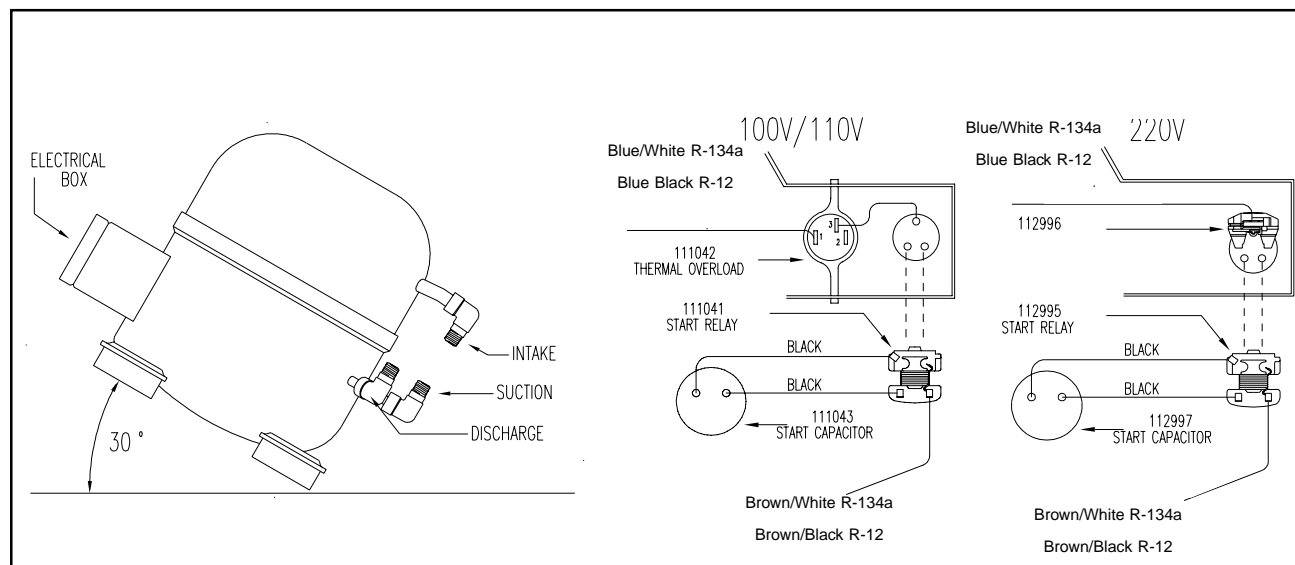


### RA19429 Vacuum Pump Protection Switch

The vacuum pump protection switch is a normally open sensor. If a 25 psi ( $\pm 2$ ") psi rating is reached at the intake, the switch closes, sending a signal to the main board.

The contacts are closed when anything greater than 25 psi is present in the lower cavity. When 25 psi is achieved in the lower cavity, the spring contact is forced into the mating contact.

## Compressor Specifications and Service



### COMPRESSOR SPECIFICATIONS

<b>Type:</b>	1/3 hp hermetic (piston type) compressor
<b>Oil Capacity:</b>	10 ounces (296 milliliters)
<b>Oil Type:</b>	150 viscosity POE refrigeration oil
<b>Voltage:</b>	100-110V iunits use a RA 19458 220V units use a RA19457
<b>Amperage:</b>	4-6 running amperage (100-110V) 20-25 locked rotor amperage 3-4.5 running amperage (220V) 16-19 locked rotor amperage

### CHECKING THE OIL

1. Depressurize the unit.
2. Remove the compressor from the unit and place on a flat surface.
3. Tilt the compressor 30 degrees (see figure above). At this angle, there should be oil in the suction fitting.

### ADDING OIL

1. Install a funnel in the suction fitting and pour two ounces of oil into the funnel.
2. Start the compressor momentarily. Plug the intake fitting but leave the discharge fitting open. The compressor will pull oil from the funnel. Stop the compressor.
3. Check the oil level. If it is still low, add 2 ounces at a time until a proper level is achieved.

### Suction and Discharge Pressure Test

1. Disconnect all fittings from the unit.
2. Cap the intake fitting.
3. Install a low side gauge on the suction fitting.

**NOTE:** The fittings used on these compressors require an O-ring fitting to seal and a 120063 hose (1/4" flare O-ring X 1/2" Acme Q.S.) with an R-134a manifold set.

4. Verify that the discharge fitting is unobstructed.
5. Start the compressor and monitor the suction readings. The compressor should pull a 25" Hg (-.85 bar) vacuum. If the compressor has weak suction, check the oil level and add if necessary. If the oil level is okay or oil was added with no improvement, replace the compressor.
6. Disconnect the low side gauge on the discharge fitting.
7. Install a high pressure gauge on the discharge fitting.

**NOTE:** The fittings used on these compressors require an O-ring fitting to seal and a 120063 hose (1/4" flare O-ring X 1/2" Acme Q.S.) with an R-134a manifold set.

8. Verify that the intake fitting is unobstructed.
9. Start the compressor and monitor the pressure for about 4 minutes. If pressure doesn't reach at least 350 psi (24 bar), replace the compressor.



## Troubleshooting

### **UNIT WILL NOT COME OUT OF CL-L, COMPRESSOR RUNS (WILL NOT RECOVER)**

1. If the unit is being run through an extension cord, eliminate its use.
2. Disconnect the high and low side hose from the vehicle with the gauge valves open. If the pressure on the gauges drops while the display shows CL-L, the recovery solenoid may need to be replaced or rebuilt.
3. Check the oil drain valve. Verify that it is closed and not bleeding through.
4. Install the low side hose on the oil drain with the low side valve closed. Check the gauge. If it has positive pressure, go to Step 5. If psi is below a 20" Hg vacuum, test the vacuum sensor for continuity. If there is continuity, replace the sensor. If there is no continuity, check the vacuum sensor wires for continuity. If the wires have continuity, replace the main board.
5. Close the tank's liquid valve. If pressure starts dropping on the gauge and the unit starts a recovery sequence, clean and rebuild the recycling solenoid.
6. Inspect the filter for flow obstructions and check for leaks around the gasket area.
7. If the equalization solenoid is receiving power, replace the circuit board.
8. Check the compressor discharge and suction pressure.

### **UNIT WILL NOT COME OUT OF CL-L, COMPRESSOR IS OFF (WILL NOT RECOVER)**

1. If the unit is being run through an extension cord, eliminate its use.
2. Remove the shroud and look for loose wires.
3. Check for voltage to the coil of the compressor relay (energized). If there is no voltage, check the wires from the main board to the compressor relay for continuity. If they have continuity, replace the main board.
4. If the compressor relay is energized, (receiving 110/220 volts) check for voltage from the #4 contact to ground with a volt meter (it should be 110/220 volts). If there is no voltage, replace the compressor relay.
5. Check for voltage to the compressor. If there is no voltage, check the wires between the compressor and the compressor relay for continuity. Repair or replace as necessary.
6. If voltage is present at the compressor, jumper the thermal overload. If the compressor runs, check the compressor amp draw. If it is drawing higher than 6 amps or not running, replace the compressor. If the compressor is cool and drawing low amperage, replace the thermal overload.

## Troubleshooting

### UNIT WILL NOT START OR COMPLETE RECOVERY

1. Check to be sure both tank valves are open.
2. Check the tank pressure. It should not exceed 300 psi. If the pressure is high, bleed the pressure down to 200 psi by recycling and allowing the automatic air purge to operate.
3. Check the red vapor tank hose for proper installation. Be sure there is no obstruction at the tank fitting.
4. Check the 2 amp fuse on the back of the main board for continuity and replace if necessary. If the replacement fuse blows, check the compressor relay for shorted contacts. Replace as necessary.
5. Check the wires between the high pressure cutout and the main board for continuity. Repair or replace as necessary.
6. Replace the high pressure cutout and retest the unit.

### Display Reads FULL

1. Check the tank weight and replace the tank if it is full.
2. Recalibrate the scale if necessary.
3. Adjustment of the P-1 pots (see main board diagram for location) may be necessary. See "Setting the P1-pot" in the function test for detailed instructions.
4. Verify that the scale is connected properly.

### Display Reads CPL

1. Verify that there is positive pressure on the unit's manifold gauges. If there is no positive pressure, connect to a vapor supply source and attempt recovery again.
2. Look for loose or broken wires in the unit.
3. Verify that the suction line strainer is not plugged. See tubing schematic for location.
4. Install the low side hose (coupler) on the oil drain with the low side valve closed. Open the oil drain valve. Look for a psi reading. If the pressure is below 13" Hg, test the vacuum sensor for continuity. If the vacuum sensor has continuity, replace it. If it does not, check the vacuum sensor wires for continuity. If the wires have continuity, replace the main board.
5. If there is no positive pressure, verify that the inlet check valve is operating properly. Also, verify that the recovery solenoid is opening and allowing flow. Repair and replace as necessary.

## Troubleshooting

### UNIT WILL NOT START OR COMPLETE RECOVERY *(continued)*

#### Display Reads "CH-P"

1. If there is less than 25 psi at the inlet, attempt recovering from a positive pressure source.
2. Verify that the wires that control the vacuum pump protection switch have continuity.
3. If there is more than 25 psi at the inlet, verify no obstructions in the manifold valves. Then replace the vacuum pump protection switch.
4. If the sensor is operating properly, press CONT to override.
5. If the main board will not let you override, verify that the keypad is sending the signal. If it is, replace the main board. If it is not sending a signal, replace the keypad.

#### Display Reads "CH-F"

1. The filter change time has elapsed. To reset the timer, refer to the operating manual for the filter change procedure.
2. If, after attempting to reset the timer, the "CH-F" warning does not disappear, replace the main board.

#### Display Reads "15.00 Vacuum Program Minutes"

1. If the display does not respond to keypad commands, verify that the keypad is plugged in. If the keypad is plugged in but not responding, replace the keypad. If the keypad is functional, a tone sounds when a key is pressed.

#### Display Reads "Scale"

1. Check the scale calibration and P1-pot adjustments. Recalibrate and adjust as necessary. Refer to function check for detailed instructions.
2. Check the scale cable to be sure it is connected to the main board.
3. Disconnect the scale cable from the main board and jumper the white and black leads. If the display still reads "Scale", replace the main board. If the display clears the message "Scale", replace the scale.

## Troubleshooting

### UNIT WILL NOT EVACUATE, PUMP IS RUNNING

1. Verify that the manifold gauge valves are open.
2. Verify that the high and low side hoses (couplers) are tight at all fittings.
3. Check the oil injector tubing for leaks and loose connections.
4. Be sure the vacuum hose is snug at both ends and not obstructed. Check the hose gaskets for leaks.
5. Check for suction at the intake of the pump. If there is none, replace the pump.
6. Remove the shroud and look for loose wires to the vacuum solenoid.
7. Check for voltage to the vacuum solenoid. If voltage is present, rebuild the solenoid or inspect for debris.
8. If no voltage is present, check the lead wires for continuity. If continuity is present, replace the main board.
9. Check the low side gauge for proper operation and calibration.

### UNIT WILL NOT EVACUATE, PUMP IS OFF

#### "U HI" on Display

1. Be sure pressure is present at the vacuum protection switch. Recover before evacuation. Unplug the switch.
2. If **U HI** goes out, check for pressure at the sensor. If there is none, replace the sensor.
3. If **U HI** remains on, replace the main board.

#### Timer Counting Down

1. Verify that the vacuum pump is plugged in.
2. Check the voltage at the pump receptacle.
3. If proper voltage is present, be sure that the pump is not overfilled with oil. If it is, drain the pump. Start and properly refill the pump. If proper voltage is present, replace the pump.
4. If proper voltage is not present, remove the shroud and look for loose wires.
5. Check the voltage to the vacuum pump relay coil. If there is no voltage, check the wires between the vacuum pump relay and the main board for continuity. If the wires are okay, replace the main board. If there is voltage at the vacuum pump relay coil, replace the relay.
6. Check for voltage from the #4 contact to ground. If there is no voltage, replace the relay.

## Troubleshooting

### UNIT WILL NOT RECYCLE, RECYCLE PROMPT IS OFF (NO FLOW)

**NOTE:** When the vacuum key is pressed, the unit automatically recycles. Recycle stops when the vacuum timer is down to three minutes. When recycle stops, the power is dropped to the recycle solenoid. The compressor continues to run until the Accum Oil separator and the filter reach a 13" vacuum.

1. Check that all recovery tank hoses are properly installed.
2. Verify that the recovery tank valves are completely open.
3. Be sure there is a minimum of 10 pounds of refrigerant in the tank.
4. Install the low side of a manifold gauge set to the oil drain.
5. If positive pressure is present at the service port, remove the cover and look for loose wires to the vacuum sensor. If there are no loose wires, check for continuity on the vacuum sensor. If there is none, replace the vacuum sensor.
6. Inspect the orange wires between the main board and the vacuum sensor for continuity. If the wires and the vacuum sensor have continuity, jumper the orange wires together.
7. Start recycling if the service port is being pulled into a vacuum. Look for loose wires to the recycling solenoid and verify that 110 volts is being sent to the recycling solenoid. If there is no voltage, inspect the controlling wires for continuity. Replace the main board if the wires have continuity.
8. Verify that you have flow through the blue tank hose and the moisture indicator. Replace and clean as necessary.
9. If the hose or moisture indicator is not plugged, attempt to recalibrate the expansion valve. If you are unable to recalibrate the expansion valve, rebuild the recycling solenoid and replace the expansion valve.
10. If all previous attempts have failed, replace the main board.

## Troubleshooting

### UNIT WILL NOT PERFORM AN AIR PURGE

**NOTE:** The air purge only operates the first 10 minutes of recycling and then drops power to the air purge solenoid. A minimum of six pounds of refrigerant must be in the tank for the air purge to function properly.

1. Verify that the recovery tank has excess air pressure in it. The only accurate way to do this is to connect a hand-held manifold gauge set to the recovery tank's air purge fitting, check the pressure in the tank and compare it with a temperature/pressure chart.
2. If excess air pressure is confirmed, verify that all recovery tank hoses are properly connected to the tank.
3. Slowly open the yellow hose where it attaches to the back of the unit. If the tank is allowing access and the yellow hose is unobstructed, pressure is released. Repair and replace as necessary.
4. If the yellow hose has flow, remove the front cover and verify that the exhaust port of the air purge device is not obstructed.
5. After recycling for at least three minutes, verify that 110/220 volts is being sent to the air purge solenoid. If it is not getting 110/220 volts, inspect the control wires for continuity. Repair or replace as necessary. If the air purge solenoid is getting 110/220 volts, go to Step seven.
6. If the wires have continuity, replace the main board.
7. If the solenoid is receiving 110/220 volts, remove the air purge device. Rebuild or replace as necessary.

### UNIT WILL NOT CHARGE, NO PRESSURE ON GAUGES

1. Verify that the tank's liquid valve is open.
2. Verify that the manifold valves are completely open and unobstructed.
3. Inspect the liquid hose for proper installation on the tank and check for crushed hose gaskets.
4. Verify that the main board has accepted the program.
5. Remove the shroud and look for loose wires.
6. If the main board does not accept the program, replace it. Be sure the keypad is sending a program signal before replacing. If the keypad is sending a signal, an audible tone sounds when keys are pressed.
7. Check the voltage at the charging solenoid. If there is no voltage, check the lead wires for continuity. If the wires have continuity, replace the main board. If there is proper voltage to the solenoid, replace the solenoid.

## Troubleshooting

### **UNIT WILL NOT CHARGE, PRESSURE ON GAUGES**

1. Verify that the unit is gaining access to the A/C system.
2. Be sure there is a minimum of six pounds of refrigerant in the tank.
3. Be sure the scale is able to move freely.
4. Verify that the unit is charging through both the high and low side hoses.
5. Check for proper voltage to the charging solenoid (not an erratic voltage drop). If the voltage is okay, go to step six. If there is a problem with the voltage, replace the main board.
6. Close the high side valve, start the engine and pull in the remaining charge on the low side of the system. When the remaining charge has been pulled from the tank, the charging solenoid closes, preventing a possible overcharge.

## Diagnostic Procedures

### AC900

Press MODE and ENTER simultaneously to enter diagnostics. Use the UP and DOWN keys to select the mode and press ENTER to start the mode.

<b>F00—LB/KG mode select</b>	ENTER toggles between modes. MODE locks the chosen mode.
<b>F01—Diagnostic Vacuum</b>	Vacuum only. Mode switch may be changed between R-12 and R-134a in this mode and a vacuum is pulled on the chosen side.
<b>F02—UL Circuit Adjustment</b>	Setting the P1-pots.
<b>F03—Filter Weight</b>	Displays weight recovered through the filter on whichever side R-12 or R-134a is selected. Mode switch may be changed between R-12 and R-134a without exiting, allowing both filter weights to be checked. Press RECOVER and RECYCLE ONLY to reset.
<b>F04—Audit Trail</b>	Displays date and number of scale calibrations. Press RECOVER and RECYCLE ONLY keys simultaneously to set the number of calibrations to 001.
<b>F05—Segment Test</b>	Lights all segments of the LCD.
<b>F06—Calibration Test</b>	Checks the scale accuracy.
<b>F07—Refrigerant Weight</b>	Estimated weight of refrigerant in the selected tank is displayed. Because tank weights vary, this can only be considered an estimate. Either tank can be selected in this mode by moving the mode switch between R-12 and R-134a.
<b>F08—Step Test</b>	When this mode is entered, the display blanks. Press RECOVER and RECYCLE ONLY keys simultaneously to continue. The display counts up from 001 to 015 as corresponding outputs are cycled on and off. this test can be accelerated at any time by pressing any key. After the step test, the display gives a code for any input that is not in its normal state, as listed. To continue when this occurs, the input must be put into its normal state. If all inputs are in their normal state, the unit resumes normal operation.
<b>Input Codes</b>	"r12 - "CH-P" R-12 Vacuum Protection Switch "r12 - "CL-L" R-12 Low Pressure Switch r134" - "CH-P" R-134a Vacuum Protection Switch r134a - "CL-L" R-134a Low Pressure Switch "ref" - R-12/R-134a Mode Switch
<b>F09 - Scale Calibration</b>	See RECALIBRATING THE SCALE for detailed instructions.
<b>F10 - Default Codes</b>	When this mode is entered, the display blanks. Press RECOVER and RECYCLE ONLY keys simultaneously to continue. The display shows a three-digit code that controls the default oil timer, filter weight, and vacuum time. The default value for this code is 356. The first digit represents the default vacuum time and is multiplied by 5 minutes to get the default. The second digit represents the vacuum pump oil timer and is multiplied by 2 hrs. to get the default. The third digit represents the default filter weight and is multiplied by 50 lbs. to get the default. This code can be changed by using the UP and DOWN arrow keys. The ENTER key locks in the new code and resets the unit with the new settings.
<b>F11 - F99</b>	Not used.



## Scale Accuracy Check and Recalibration for AC900

### CHECKING THE SCALE ACCURACY

1. Turn on the MAIN POWER switch.
2. Press the MODE key until the program prompt is highlighted on the screen.
3. When the screen has the program prompt highlighted, press the MODE and ENTER keys simultaneously to enter the DIAGNOSTIC mode.
4. Remove all weight from both scale platforms.
5. Using the UP and DOWN keys, toggle the display to read F06.
6. Press the ENTER key to turn the scale into a direct reading weight scale.
9. The display flashes A1, then displays 0.00.
10. Place a certified weight, between 10 and 40 lbs., in the center of the scale platform. Using the UP and DOWN keys, toggle to that weight on the display. Press ENTER.
11. The display flashes "134A" then displays "ZEro" (zero).
12. The display flashes "A1" then read "0.00".
13. Place a certified weight, between 10 and 40 pounds, in the center of the scale platform. Using the UP and DOWN keys, toggle to that weight on the display, then press ENTER. The display then shows the selected refrigerant type.
14. Check the scale accuracy.

**NOTE:** Whatever weight is on the scale when ENTER is pressed will not be shown on the display. By pressing ENTER, the unit automatically zeros the weight on the scale of the selected refrigerant type. If you remove the weight, the display shows the change in total weight, but does not show a negative sign. The refrigerant selector switch may be changed during the procedure to check both scales.

If the scales does not react to testing, verify that the scales are plugged into the main board.

### RECALIBRATING THE SCALES

1. Remove all weight from the scale platform.
2. Turn on the main power switch.

**NOTE:** If the unit is just being turned on, the screen defaults to display the selected refrigerant type. Press MODE until the program message is displayed.

3. Press the MODE and ENTER keys simultaneously to enter the DIAGNOSTIC mode. Use the UP and DOWN keys to toggle the display to F09.
4. Press the ENTER key. The display now reads CAL.
5. Press the RECOVER and VAC/RECYCLE keys simultaneously. The display flashes DATE and then shows 0.00.
6. Using the UP and DOWN keys, enter the current month and year. For example, if the unit is being calibrated in August of 1999, enter 0-8-9-9. Press ENTER.
7. The display flashes r12, then displays ZEro (zero).
8. Make sure nothing is on or touching the R-12 scale platform. Press ENTER.

### SETTING THE P-1 POT

1. Remove all weight from the scale platforms.
2. Turn on the MAIN POWER switch.

**NOTE:** If the unit is just being turned on, the screen will default to display the selected refrigerant type. Press MODE until the program message is displayed.

3. Press the MODE and ENTER keys simultaneously to enter Diagnostic Mode. Use the UP and DOWN keys to toggle the display to "F02".
4. Press the ENTER key. The screen will display "000".

**NOTE:** The zero on the left of the display is for R-12, and the zero on the right of the display is for R-134A. Since the AC900 uses two 30 lb. tanks, the full limit should be set at 43 lbs.

5. Place a known weight of 43 lbs. on the R-12 scale. The zero on the left of the display should change to a "1". The display should be reading "100". At this point, adjust the R-12 P-1 pot so the full limit is set at 43 lbs. Turning the P-1 pot *clockwise will decrease* the amount of weight you can put on the scale before the zero changes to a "1" which indicates the full limit has been reached. Turning the P-1 pot *counterclockwise will increase* the amount of weight allowed before the zero changes to a "1" indicating that the full limit has been reached.
6. Repeat step 5 on the 134A scale.

**NOTE:** The zero on the right of the display indicates the 134A full limit. Once the 134A full limit is reached, the display reads "001".

## Diagnostic Procedures

### 34800 and 34801

All diagnostic modes mentioned here are accessed by entering the diagnostic functions menu. Press the SHIFT and ENTER keys simultaneously. The unit's display prompts you for the function to run by displaying FUNC. Unless otherwise noted, pressing RESET accepts the current settings and returns the unit to normal operation.

#### STANDARD FUNCTIONS

##### 0 - LBS OR KG MODE SELECTION

ENTER toggles the current mode. The current mode is displayed by either the lbs. or the kg. segments.

##### 1 - Diagnostic Vacuum

The refrigerant mode switch selects which "side" of the unit to pull a diagnostic vacuum on. To exit from this routine, look for the U-HI message or press HOLD. From either of these two states, a RESET returns the unit to normal operation.

##### 2 - Add Refrigerant

The current refrigerant mode is assumed. The process begins immediately upon the start of this function. Therefore, the liquid hose must already be disconnected from the correct tank and attached to the reserve tank that is being added from. The display shows ADD briefly and then the amount of refrigerant transferred by weight. The function continues the transfer until one of the following occurs: HOLD is pressed, the reserve tank is empty and pulled to a partial vacuum, or the maximum fill weight of the function has been reached. Under the last two conditions, the display flashes between CPL and the amount of refrigerant transferred by weight. In the HOLD condition, pressing HOLD again resumes the operation.

##### 3 - Accumulated Filter Weight

Displays total accumulated filter weight. Press the CHARGE and ENTER keys simultaneously to reset the counter to zero.

##### 4 - Audit Trail

Displays date of last calibration and how many calibrations have been performed on the scales (to a maximum of 225.) Pressing CHARGE and ENTER simultaneously also returns this counter to zero.

##### 5 - Segment Test

This test lights all segments of the LCD for quick indication that the display routines and circuitry are functioning properly.

## Diagnostic Procedures

### 34800 and 34801 *(continued)*

#### 6 - Scale Calibration Check

Display reflects any absolute weight change on the selected scale. Upon entry to this mode, the display briefly shows which refrigerant mode you are in, then displays 0.00. If the refrigerant mode switch changes states, the display repeats this indication for the selected "side." To zero the reading, press 6 at any time. This process is useful for adding weight to check positive response and then removing weight to check negative response. Upon exit, the weights will NOT be updated to reflect what was done to the scales.

#### 7 - Refrigerant Weight

Display indicates estimated refrigerant by weight in the selected tank. This weight is obtained by the program by subtracting the coded tank weight from the total weight seen by the scale. Because of this variation in tank weights, this figure should only be used as an estimate. The refrigerant mode switch allows you to select which tank to use.

#### 8 - Unused Function

Returns unit to normal operation.

#### 9 - Gateway to Deep Diagnostics

Display shows four dashed lines which prompt entry of coded special functions. These functions directly affect large portions of the unit's operation.

## Deep Diagnostic Functions

**NOTE: Pressing the RESET key has no effect on any of these functions.**

### SCALE CALIBRATION

The display briefly shows DATE, then 0.00. Enter the date in the following format: MM.YY. press ENTER to accept the entry. The display now briefly shows r12, followed by ZERo. Make sure there is no weight on the R12 scale and press ENTER. The display now shows A1 and then 0.00. Place a known weight on the R12 scale and enter the value of the weight. Press ENTER to accept.

The display now briefly shows 134a, then shows ZERo. Make sure there is no weight on the R-134a scale and press ENTER. The display now briefly shows A1, then 0.00. Place a known weight on the R-134a scale and enter the value of the weight. Press ENTER to accept. The unit updates its programming and returns to normal operation.

### 3 - UL CIRCUIT ADJUSTMENT (P1-pot)

The P1-pots on the 34800 are located on the front of the circuit board. The pot on the left is for the R-12 scale, and the pot on the right is for the R-134a scale. Turning the pot *counter-clockwise increases* the full limit. Turning the pot *clockwise decreases* the full limit. Enter the deep diagnostic mode by pressing 9 when the FUNC message displays.

Four dashed lines appear on the display. Press 3 on the keypad. The display shows 000. The zero on the left is for R-12. The zero on the right is for R-134a. Since this machine uses 30lb. tanks, the full limit should be set at 43 lbs. When 43 lbs. is placed on the R-12 scale, the zero on the left should change to a number one (1). When the zero changes to a one, you have reached the full limit on the R-12 scale.

Remove a small amount of weight from the scale and watch for the number one to change back to zero. Repeat this process on the R-134a scale. The only difference is that the zero on the right of the display indicates whether or not you have reached the full limit on the R-134a scale. This change is indicated by the change from zero to the one, then back to zero again.

### DIAGNOSTIC STEP TEST

Push Shift-Reset and Enter at the same time

Then push 9

Then push 5

Push 6 and 9 at the same time

01	R-134a	Recycle Solenoid	09	R-12	Recover Solenoid
02	R-134a	Recover Solenoid	10	R-12	Vacuum Solenoid
03	R-134a	Vacuum Solenoid	11	R-12	Charge Solenoid
04	R-134a	Charge Solenoid	12	R-12	Air Purge Solenoid
05	R-134a	Air Purge Solenoid	13	R-12	Compressor Relay
06	R-134a	Compressor Relay	14		Vacuum Pump Relay
07	R-134a	Equalization Solenoid	15	R-12	Equalization Solenoid
08	R-12	Recycle Solenoid			

## Function Test

### RECOVERY CHECK

1. Turn on the MAIN POWER switch.
2. Install the loose end of the low side hose (coupler) to the oil drain.
3. Close the low side manifold valve.
4. Open the high side manifold valve.
5. Verify that all tank hoses are properly attached to the recovery tank.
6. Completely open both tank valves.
7. Press RECOVER. The compressor starts and the low side gauge pulls into a 13" Hg vacuum.

**NOTE:** The unit's low side gauge pulls to a 13" Hg vacuum and starts the recovery process. Recovery is engaged when the scale reading is displayed. The low side gauge pulls to a 13" Hg vacuum again and the unit shuts off.

8. When recovery is complete, the display shows a scale weight, then display the "CPL" message.
9. The low side manifold gauge builds positive pressure and a pressure transfer should be heard. This is the result of the equalization solenoid opening and returning oil to the compressor. If no pressure rise occurs, the equalization solenoid and its tubing must be inspected for obstructions.
10. Disconnect the low side hose (coupler) from the service port and open the low side manifold valve.
11. Press RECOVER. The unit recovers to 13" Hg of vacuum and shuts off.

### EVACUATION & RECYCLING CHECK

**NOTE:** The recovery tank must have at least 6 pounds of refrigerant in it to perform this test.

1. Close the high side manifold valve.
2. Install the loose end of the low side hose (coupler) from a separate hand-held manifold gauge set to the service port. Verify that the valves are closed on the hand-held manifold gauge set.
3. Program a 20 minute vacuum into the main board and start the automatic vacuum process. The vacuum pump starts.
4. Verify that the low side manifold valve on the unit's control panel is open.
5. The low side gauge on the unit starts registering a vacuum.
6. Within 10 seconds of the vacuum pump starting, the RECYCLE prompt appears on the display and a click is heard. The compressor is starting and the recycling solenoid is being energized.
7. After 60 seconds of recycling, the air purge solenoid receives 110/220 volts to open it. If air is being purged, the solenoid is getting 110/220 volts. In some cases, no air is present and the voltage needs to be checked to verify the solenoid operation.
8. After 5 minutes, the low side gauge on the unit's control panel is in a 29" to 30" Hg vacuum.
9. The low side gauge on the hand-held manifold gauge set rises to around a 30 to 40 psi reading (expansion valve pressure). If the expansion valve setting is not in range, adjust accordingly.
10. The low side manifold gauge on the unit's control panel should hold a vacuum. If it does not, inspect the hoses for leaks.
12. Close the tank's red vapor valve.
13. Disconnect the tank's red vapor hose from the tank.
14. Using a separate manifold gauge set, verify that the manifold gauge valves are closed.
15. Connect the tank's red vapor hose to the high side of the separate manifold gauge set.
16. Connect the hose from the center port of the hand-held manifold gauge set to the tank's vapor fitting.

17. Open the tank's red vapor valve. Do *not* open the red high side valve on the hand-held manifold gauge set.
18. Use the RECYCLE ONLY function. The unit begins recycling and the high side manifold gauge starts increasing pressure.
19. The unit shuts off when the high side manifold gauge shows a pressure of 435 psi ( $\pm 20$  psi). The display shows the "HI-P" message.
20. There is an initial drop in pressure to around 275/300 psi. After the initial drop in pressure, the pressure should hold for 3 minutes. If the pressure drops instantly or bleeds off steadily, the recovery check valve needs to be replaced.
23. After checking for pressure loss, slowly open the high side manifold valve to equalize the unit and tank pressure.
24. Once the pressure is equalized, close the tank's red vapor valve.
25. Close the high side manifold valve and disconnect (at the tank end) the hose between the tank's red vapor valve and the manifold gauge set.
26. Disconnect the tank's red vapor hose from the manifold gauge set.
27. Reconnect the tank's red vapor hose to the tank's red vapor valve.
28. Open both manifold gauge valves on the unit's control panel and press RECOVER. Allow the unit to recover until it automatically shuts off.

## CHARGING AND SCALE CHECK

1. Turn on the MAIN POWER switch.
2. Check the scale accuracy and recalibrate if necessary. See Scale Section for detailed instructions.
3. Install the high and low side hoses to the vapor and liquid valves of a separate reusable cylinder.
4. Program a two pound charge into the main board.
5. Open both manifold gauge valves and start the automatic charging process. The charging process stops when the programmed amount of weight has been lost from the scale. The display shows the "CPL" message.
6. Recover the refrigerant charged into the tank.
7. Repeat full function test for the other refrigerant type as necessary.

**NOTE:** To ensure a complete charge, recycle for at least five minutes before attempting to charge. During this process the refrigerant is heated in the recovery tank.

### Labor Rates

Robinair authorizes a 2 hour charge to troubleshoot and complete a full function test on units that are covered under factory warranty. This includes leak testing. The authorized time for parts replacement is 15 minutes per part. If repairs are estimated to exceed 3 hours, prior authorization from Robinair is required.

*Filters are considered to be a consumable item and, as such, they are not covered under the factory warranty. This includes parts and labor.*